1968

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PACIFIC CONTINUOUS STEEL LIMITED

601 - 850 West Hastings Street

Vancouver 3, B.C.

For Immediate Release

Pacific Continuous Steel Limited announces plans for new primary industry in the lower mainland area. The Company proposes to construct a steelmaking plant consisting of a rotary steelmaking furnace and a continuous casting machine for production of semi-finished steel billets.

The plant has a designed capacity up to 100, 000 tons per year. Time for procurement and construction is estimated at nine months.

The initial market will be primarily export. Once the first phase of the operation is established, the Company plans to build a steel rolling mill in which a portion of the steel billets will be converted to steel bars for the B.C. construction industry.

The Company has purchased 67.4 acres in the Municipality of Delta. The site is located on the south shore of the main channel of the Fraser River. The initial facilities will occupy approximately one-quarter of this area, thus providing ample room for future expansion.

The raw material for the first stage will be scrap metal to be melted and cast into steel billets. A billet is a piece of steel approximately 4 by 4 inches in cross section which can be cut to required lengths and is used for subsequent rolling into a variety of steel bar mill products. The plant will therefore realize additional manufacturing and export of B.C. manufactured goods in preference to exporting of raw materials directly.

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The Company plans to use the Sherwood Process for Continuous Steelmaking. This new patented process visualizes a continuous production line starting with scrap metal or iron concentrate which will be refined and then cast directly on a continuous basis without the use of the batch process. This is the process on which W.L. Sherwood was invited in 1967 to report to the United States Senate Subcommittee on Antitrust Monopoly in Washington, D.C., because of subcommittee recognition of the potential engineering and cost advantages for its application in small steel plants. Pacific Continuous Steel Limited is licenced to use the Sherwood Process throughout Canada and holds exclusive rights in B.C. and Alberta.

The president, W.L. Sherwood, P.Eng., is a metallurgical engineer and a 1956 graduate of U.B.C. He has more than 12 years experience associated with the steel industry, including employment with Atlas Steels Limited, The Steel Company of Canada Ltd., and Manitoba Rolling Mills.

The economy of operation results from savings in both capital and operating costs, according to Mr. Sherwood. The cost of the furnace and casting machine installation is approximately $1 million. A conventional electric-arc furnace plant of similar capacity normally costs in excess of $2 million. It has also been estimated that the reduction in the cost of producing a ton of steel will be from $5 to $10 a ton as compared with conventional plants.

A competitive marketing advantage is expected from this operation, particularly in the export steel market. The Company's economic consultants, Hedlin, Menzies & Associates Ltd., confirm that the export market for steel billets is sufficiently large that the Company's output will not have any significant influence on the overall demand and that all of the

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envisaged production can be marketed at prevailing price levels. Based on 50, 000 to 100, 000 tons of sales per year, they project a profitable operation from the outset.

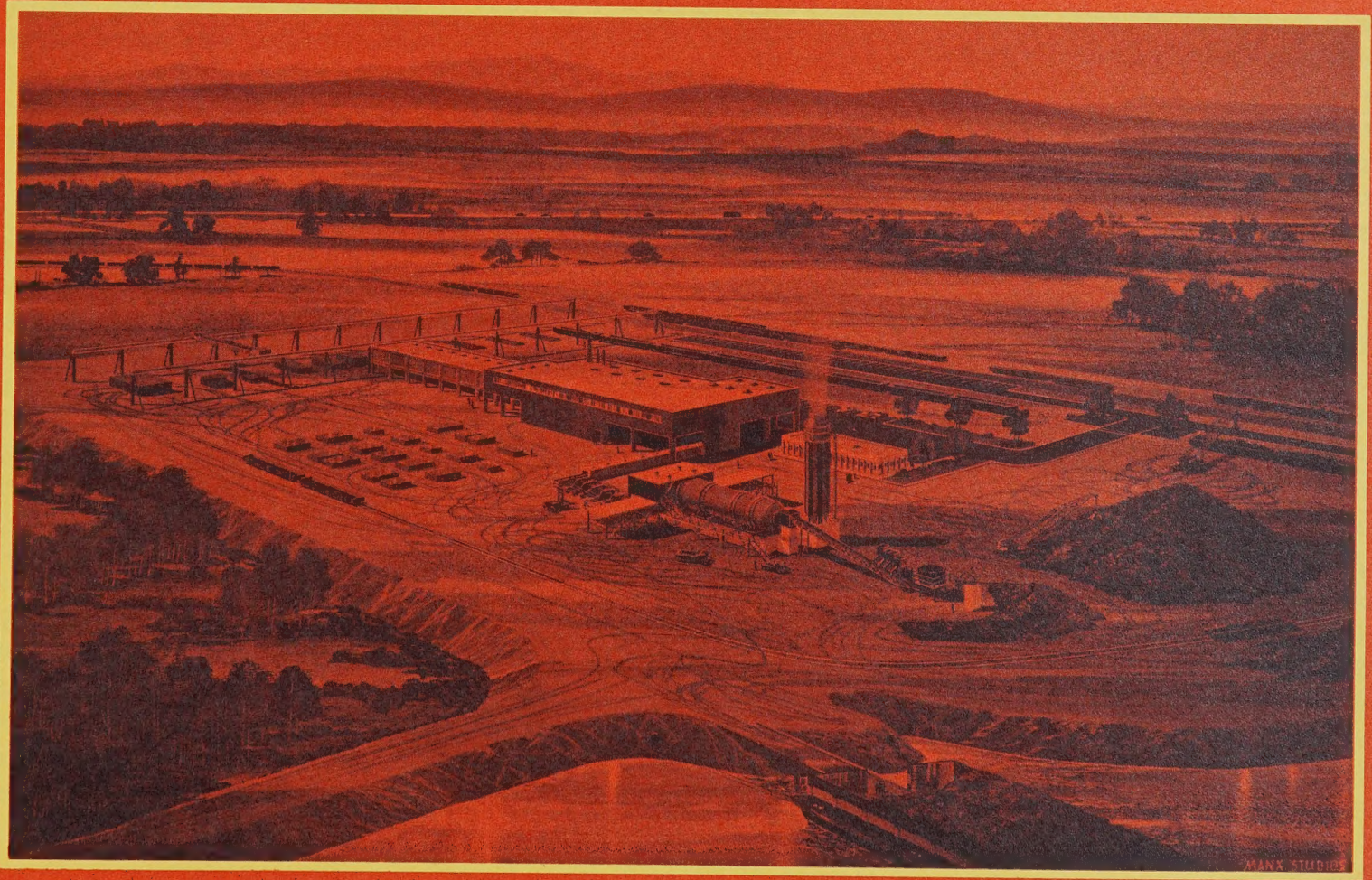
The total B.C. market for bars in the Company's size range from the second stage bar mill is estimated to be approximately 100, 000 tons yearly at the present time growing to 200, 000 tons in ten years. Penetration of this market is also expected to provide the Company opportunity for growth.

Pacific Continuous Steel Limited is making a public offering of common shares to finance the equity for this new primary steel industry. The share offering is 400, 000 shares at $4 per share. The shares will be offered throughout the province of British Columbia by the Company through registered investment dealers.

The Company considers this an opportune time for entry of a new plant into the steel business, not only because of existing domestic and export market demand for steel, but also because of recent advances in technology whereby the new facility can select the best of melting, casting and steel rolling techniques to obtain a production advantage over established plants.

NEW BASIC INDUSTRY FOR BRITISH COLUMBIA

PACIFIC CONTINUOUS STEEL LIMITED



THE COMPANY

A need for primary manufacturing industries to expand the industrial base of British Columbia has been evident for many years. Pacific Continuous Steel Limited was formed in 1966 to develop a new iron and steel plant in this area as such a basic industry. This new company undertook to investigate markets for a full range of steel products including plate, structurals, sheet, strip, and skelp for pipemaking. Various sources of raw materials including iron and steel scrap, iron ore concentrates from presently producing mines, and from possible new producing mines were also studied.

In 1968, the Company settled on a steel billet plant and bar mill located on the lower mainland as the first stage of operations. The products from this new plant are to serve both the British Columbia market and export markets abroad.

The Company is aggressive in policy, particularly with respect to adoption of new and advanced modern technology which is designed to achieve competitive advantages by savings in capital and operating costs. It is the clear intention that this steel plant be the most advanced of its type in the world.

This Company has been initiated and to this point developed and financed primarily by British Columbia individuals. Since common shares are being publicly offered within the province, a predominance of British Columbia ownership is anticipated to continue into the foreseeable future.

THE PROPOSED PLANT

The Company proposes an orderly development progressing in stages. Stage I is to be a plant to produce steel billets for export by remelting prepared scrap steel. A billet is a piece of solid steel approximately 4 by 4 inches in cross section which can be cut to required lengths. Stage II of production will be construction of a steel rolling mill to convert a portion of the billets into concrete reinforcing steel and miscellaneous steel bars.

The flowsheet depicts the principal equipment and flow of materials for the Stage I development. This is to include a prototype installation of the patented Sherwood Rotary Furnace for Continuous Steelmaking, linked with a continuous billet casting machine. In this combination, desirable features have been selected from operating units and combined in a new way in order to achieve continuous steelmaking directly from prepared raw materials.

The proposed rotary furnace consists of a rotating steel cylinder approximately 30 feet long by 8 feet in diameter which is lined with refractory bricks. It is fired by two burners utilizing gas or oil combustion with preheated air, one burner at the charge end for melting and the other at the discharge end for refining the steel. Prepared scrap and necessary steelmaking additions are fed into the charge end of the furnace and melted down to form a fused bottom layer of metal and a top layer of slag (non-metallic constituents), which are continuously stirred by the rotation and advanced along the furnace until the desired steel composition is obtained at the discharge end. The steel is discharged and separated from the slag, and its composition by controlled additions of alloying materials in an intermediate holding vessel which, in turn, feeds the continuous casting machine.

In continuous casting, the liquid steel is continuously poured into the top of a water-cooled curved copper mold, in which the outer surface of the metal is solidified. The partly solidified billet is continuously withdrawn from the bottom of the mold and pass-

ed through a water-spray chamber by means of withdrawal-straightening rolls. After the hot solidified billet exists from these rolls, it is cut to preset lengths by an automatic acetylene torch and passed to a run-out table ready for piling and storage.

Continuous billet casting has been established in a large number of operating plants, but heretofore has been supplied batchwise by steel contained in ladles. The combination of continuous casting with a continuous supply of steel from the Sherwood Process furnace, in the Company's opinion, represents a revolutionary advance in steelmaking technology.

A continuous process inherently offers the prospects of higher yields, fewer personnel, greater ease of control and is more readily automated.

The rolling mill planned for Stage II is envisioned as a continuous, in-line system designed specifically for economy and minimum personnel requirements. A full range of sizes of reinforcing steel from No. 3 (3/8") to No. 11 (1 3/8"), as well as miscellaneous small bars including rounds, flats, squares, tees, channels and angles up to about 2½" in size are to be produced. This type of mill is designed particularly to be flexible, making the smaller sizes of bars nearly as efficient as the larger ones and affording rapid changes in bar size for short production runs. It should therefore be advantageous for the economical production of small bars and for the filling of orders requiring rapid delivery. Final detail design and selection on this rolling mill facility, as well as financing for this stage, are to be undertaken during the construction and initial operating period of the billet plan.

The capital cost for Stage I is estimated at approximately $1.5 million including land acquisition cost. Stage II entails a further $1 million investment. Engineering of Stage I is well advanced up to ordering of major equipment. Procurement, construction and start-up will require approximately 9 additional months. The bar mill Stage II is presently envisaged to begin operations within one further year.

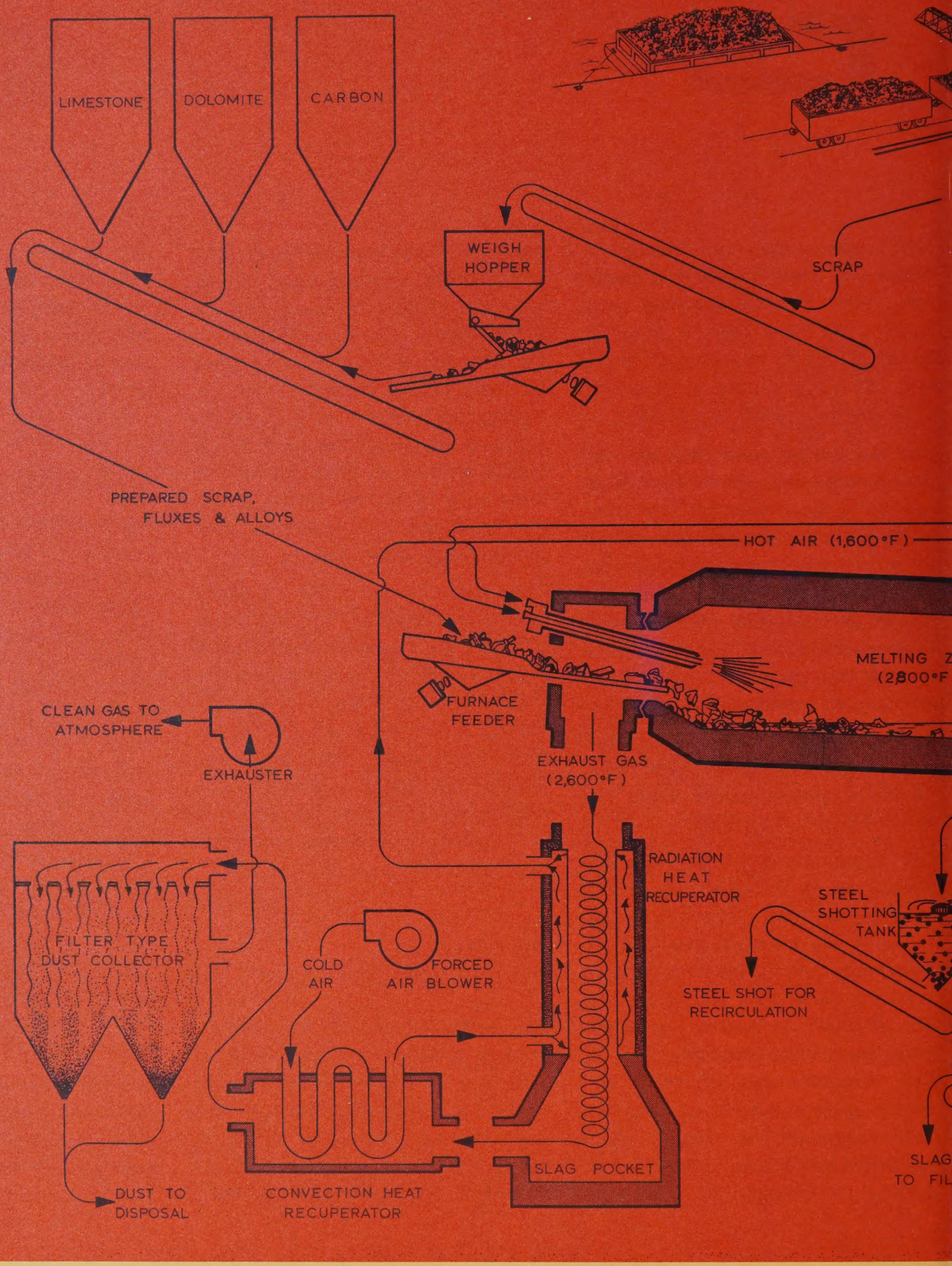
POTENTIAL COST ADVANTAGES

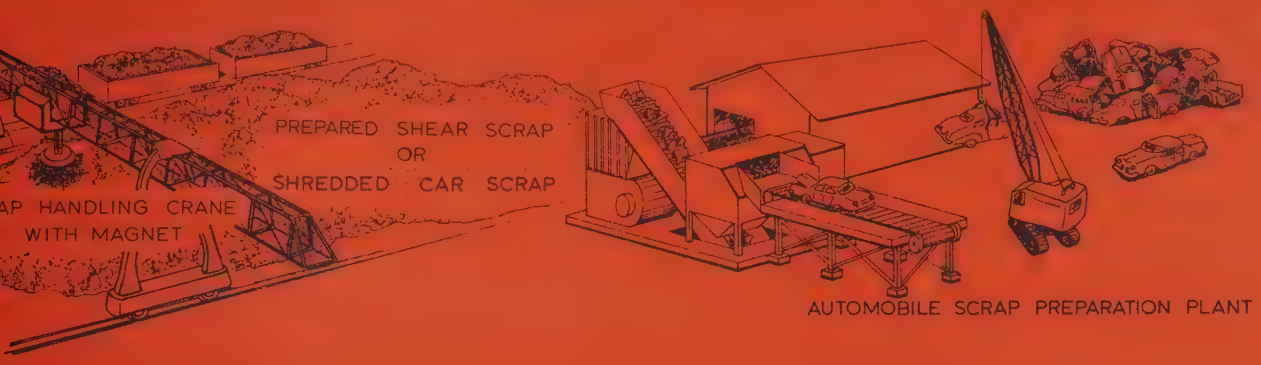
The estimated cost of the furnace, casting machine and auxiliaries is less than $1 million. An electric-arc furnace plant of similar capacity normally costs more than $2 million. In addition to capital cost savings, an operating cost advantage of more than $5 per ton has been estimated. In the event these estimates are borne out by experience in practice, this plant will have a substantial advantage in export markets for steel billets.

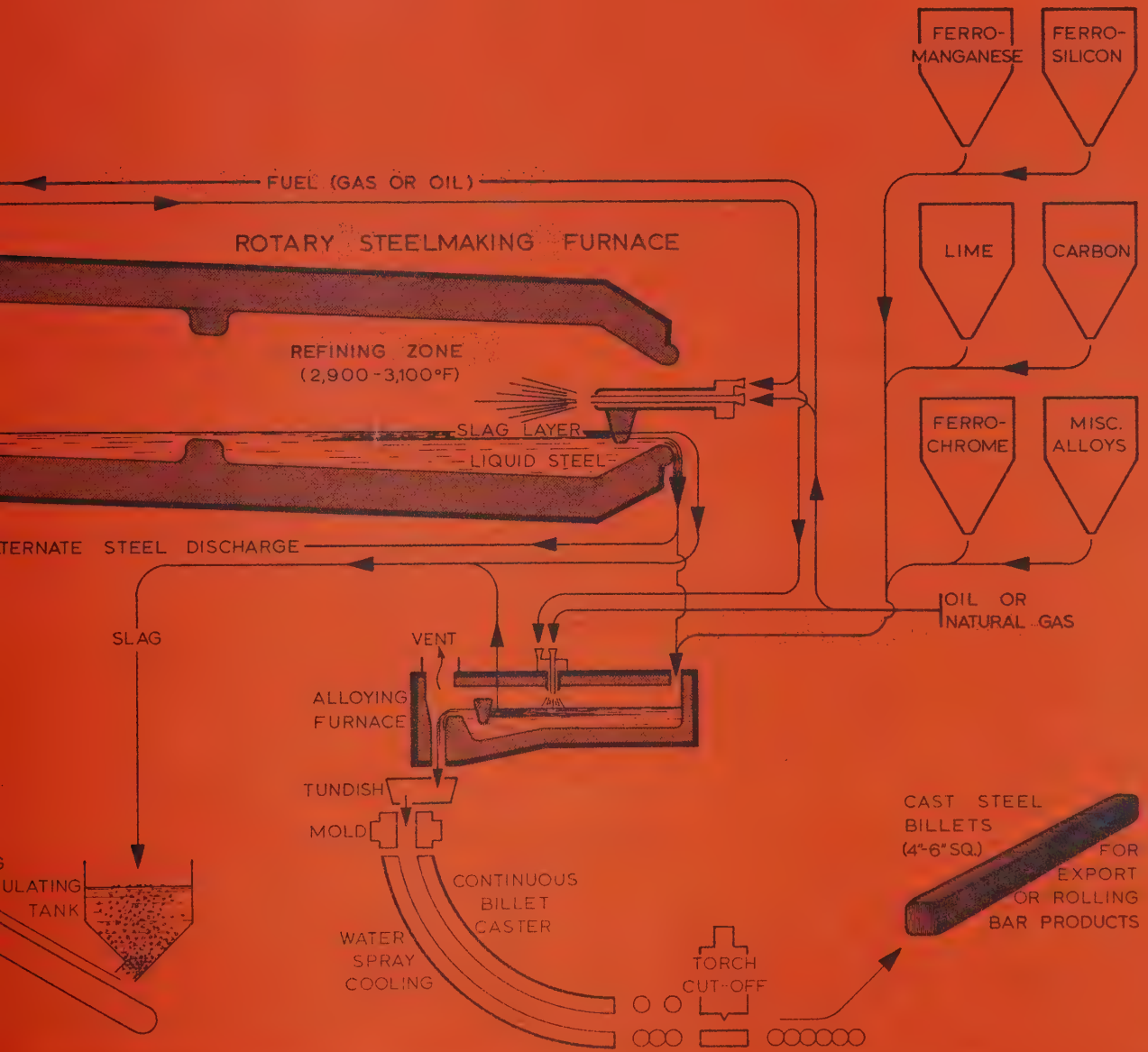
THE SITE

A 67.4 acre site with deep-sea access has been acquired by the Company. This is located in the Municipality of Delta on the south shore of the Fraser River approximately 2½ miles upstream from the George Massey (Deas) Tunnel. The property is serviced by the Great Northern and Canadian National Railways, the latter operating a loading wharf for rail barges on adjoining property. Provision for adequate natural gas, water and power services are also available. Dow Chemical of Canada Ltd. has operated a chemical plant nearby for some years and a new natural gas liquefaction and storage plant is now planned by B.C. Hydro. Horton Steel Works Limited also plans a steel fabricating facility on adjoining land.

The Stage I and Stage II developments will occupy about one-quarter of the total area owned by the Company and the remainder will be available for future expansion.


LIMESTONE
DOLOMITE
CARBON
WEIGH HOPPER
SCRAP
PREPARED SCRAP, FLUXES & ALLOYS
HOT AIR (1,600°F)
MELTING Z
(2,800°F
FURNACE FEEDER
CLEAN GAS TO ATMOSPHERE
EXHAUSTER
EXHAUST GAS (2,600°F)
RADIATION HEAT RECUPERATOR
STEEL SHOTTING TANK
FILTER TYPE DUST COLLECTOR
COLD AIR
FORCED AIR BLOWER
STEEL SHOT FOR RECIRCULATION
SLAG POCKET
SLAG TO FIL
DUST TO DISPOSAL
CONVECTION HEAT RECUPERATOR


PREPARED SHEAR SCRAP
OR
SHREDDED CAR SCRAP
AP HANDLING CRANE
WITH MAGNET
AUTOMOBILE SCRAP PREPARATION PLANT


FERRO-MANGANESE
FERRO-SILICON
FUEL (GAS OR OIL)
ROTARY STEELMAKING FURNACE
LIME
CARBON
REFINING ZONE
(2,900-3,100°F)
SLAG LAYER
LIQUID STEEL
FERRO-CHROME
MISC. ALLOYS
TERNATE STEEL DISCHARGE
OIL OR NATURAL GAS
SLAG
VENT
ALLOYING FURNACE
TUNDISH
MOLD
ULATING TANK
CONTINUOUS BILLET CASTER
WATER SPRAY COOLING
TORCH CUT-OFF
CAST STEEL BILLETS (4"-6" SQ.) FOR EXPORT OR ROLLING BAR PRODUCTS

MANAGEMENT & OPERATING PERSONNEL

W. L. Sherwood, B.A.Sc., President, is a U.B.C. graduate in metallurgical engineering and also with a year of graduate business administration. He is a registered professional engineer in B.C. and Ontario, and a member of the Canadian Institute of Mining & Metallurgy, the Association of Iron and Steel Engineers and the American Society for Metals. His experience in the Canadian steel industry includes periods with Atlas Steels Limited, The Steel Company of Canada Ltd., and Manitoba Rolling Mills, which encompassed metalurgical production control, development, engineering and plant supervision. L. A. Biddlecombe, Secretary, was Manager, Northern Electric Company Limited, Prince George office and also Manager and Treasurer for the Vaneco Credit Union.

Directors include C. Dean Dricos who has extensive experience in steel sales and is presently Regional Sales Manager of Quadra Steel Limited; George L. Morfitt, B.Com. (U.B.C.); C.A., is Director and Comptroller of J. Diamond & Sons Ltd. and affiliated companies, and an executive member of the U.B.C. Alumni Association; and J. Howard Sismey, General Superintendent of Pacific Pipe & Flume Ltd. for six years.

The policy of the management is to seek the assistance of qualified consultants and advisors in those areas where specialized knowledge is required. These have included Barbeau, McKercher, Collingwood & Hanna, legal; Peat, Marwick, Mitchell & Co., accounting; Swan Wooster Engineering Co. Ltd., engineering; Dr. I. H. Warren, metallurgical; and Hedlin, Menzies & Associates Ltd., economics. Rolling mill consultant is D. C. Moulson, Chief Mechanical Engineer, Heede International, Ltd. The Company is also in contact on design with leading suppliers of specialized equipment for the operation.

Organization for construction and start-up is now well advanced. The management also has wide range of contacts with qualified personnel in the steel industry, and operating administrative staff are to be built up as required.

The Stage I development will employ 50 to 60 people, including office staff. A corresponding number of additional personnel will be required for the Stage II rolling mill.

POLLUTION CONTROL

The Sherwood rotary furnace unit is a completely gas-tight system. This is not the case with the present conventional open hearth and electric-arc furnace, where the doors, roof and electrode openings are virtually impossible to seal and whereby substantial leakage of dust-laden gases is inevitable. With respect to the exhaust gas, a filter-type dust collection unit is planned. Virtually clean gases will thus be discharged to atmosphere, well within pollution control requirements now recommended for the lower mainland area. The plant does not employ acids or any other noxious chemicals in the processing sequence. The slag will be granulated and used as ballast to fill the Company's own future development area to grade level.

The operation will also increase the degree of utilization of scrapped automobiles in the province thereby acting as an influence to clean up unsightly abandoned cars and scrapyards.

RAW MATERIALS

The Company plans to use scrap iron and steel as the principal raw material. Automobile bodies prepared by shredding or shearing are a particularly suitable feed material. A new company, N & S Steel Corporation

Ltd., has started operations just this year for preparing shredded scrap from automobiles. It is understood that other firms are also considering additional new preparation equipment for cars and for other categories of scrap. Hedlin, Menzies & Associates Ltd., Consulting Economists, have made a study of the raw material supply for the Company, establishing that sufficient scrap is available for the Stage I development.

Iron ore concentrate from B.C. mines is another source of raw materials which can be considered for the future. There is also the possibility of new iron ore mining operations being developed in the province.

Limestone is required as a slag-forming addition and this is produced in abundance from quarries located on Texada Island. Other raw materials are all produced locally or available from local distributors.

In this way, the proposed plant will result in manufacturing and export of manufactured goods produced from B.C. raw materials and resources, rather than exporting of these materials in unprocessed form.

PRODUCTS & MARKETS

Steel billets ranging from 5 to 30 feet in length and 3 to 6 inches in cross section will be the principal products from Stage I. These are to be exported as semi-finished steel to rolling mills abroad who have a deficiency in melting capacity in relation to rolling capacity.

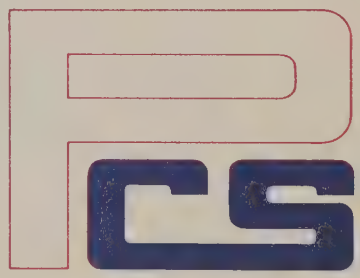
A market study by Hedlin, Menzies & Associates Ltd., confirms that the export market demand for billets is sufficiently large, that the output from the Stage I plant will not have an appreciable impact on the world market or billet prices, and all output from the Pacific Continuous Steel Limited plant will be saleable at prevailing price levels. A long-term contract with a single buyer of steel billets is also being considered and under negotiation.

The Stage II rolling mill will market concrete reinforceing steel from ⅜ inch to 1½ inch diameter and also miscellaneous bars such as rounds, flats, angles, and small structural sections. The construction industry in British Columbia is the principal market for these products, although a sales efort will also be directed towards bar exports.

The total B.C. market for bar mill products in these sizes now is presently approximately 100,000 tons per year and is estimated to increase to 200,000 tons by 1980. Increasing penetration of this market will lead to growing profitability from sales of bar mill products.

PRODUCTION AND EARNINGS

The rated output of the billet plant is 15 tons per hour and it is expected normal production will vary from 10 to 20 tons per hour depending upon the section and grade being cast, with the production rate increasing as the operators gain operating experience. This is expected to result in an annual output in a range from 50,000 to more than 100,000 tons per year. Based on the billet plant production growing from 50,000 tons in the first, to 82,000 tons in the fifth, and 98,000 tons in the tenth year, the consultants have estimated net earnings after taxes of $319,000, $623,000 and $794,000 in these respective years. With the addition of the Stage II rolling mill to supplement the billet plant income, the combined earnings are estimated at $319,000 in the first, $718,000 in the fifth, and $1,270,000 in the tenth year. Stage I and Stage II are the initial developments. Expansion to include other products as well as integrate to process ore concentrates will be continually assessed. When expansion is warranted by sufficiently profitable projections, additional financing for the expanded facilities will be sought. Starting operations at this time, Pacific Continuous Steel Limited is in a position to expand with anticipated rapid acceleration in manufacturing development of British Columbia in the future.



NEW SHARES

AR30

PACIFIC CONTINUOUS STEEL LIMITED

850 WEST HASTINGS STREET, VANCOUVER, B.C. CANADA. TEL. 684-2278. AREA CODE: 604

400,000 COMMON SHARES

(without nominal or par value)

	Price to Public	Underwriting Discounts or Commissions	Proceeds to Company (1)
Per Share	$4.00	$ .28	$3.72
Total	$1,600,000	$112,000	$1,488,000

(1) Before deduction of audit, legal, and printing expenses payable by the Company estimated at $8,500.

PRICE: $4.00 per share

400,000 Common shares will be offered by the Company through registered securities dealers at the price of $4.00 per share, such dealers to be paid a commission not exceeding $.28 per share. For details of the offering refer to the headings "Share Offering and Plan of Distribution" and "Use of Proceeds".

At the date of the accompanying financial statements the book value of the net assets of the Company was $.32 per share. Upon completion of this financing the book value of the net assets of the Company will be $1.80 per share. Purchasers buying shares at $4.00 per share will experience an immediate dilution in the book value of their shares of $2.20 per share.

SPECULATIVE NATURE OF SECURITIES

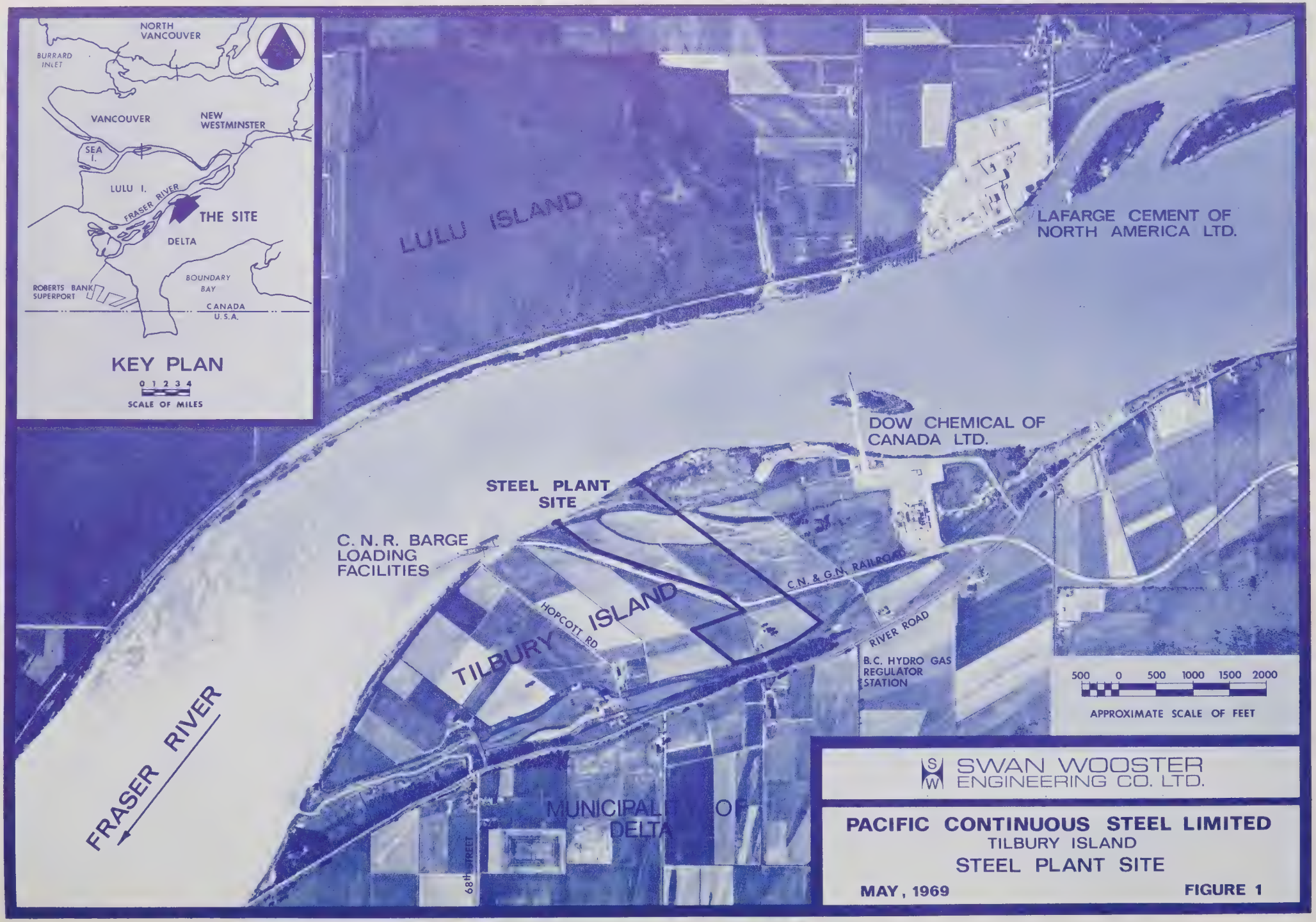
The shares of the Company are considered to be Speculative Securities as the Company is engaged in a new venture still in the development stage. The rotary steelmaking furnace proposed to be constructed by the Company is the first one of this design and the initial operation therefore will be on a pilot basis.

TRANSFER AGENT AND REGISTRAR

Montreal Trust Company
466 Howe Street
Vancouver, B.C.

No Securities Commission or similar authority in Canada has in any way passed upon the merits of the securities offered hereunder and any representation to the contrary is an offence.

This Prospectus is dated this 12th day of September, 1969.



SWAN WOOSTER ENGINEERING CO. LTD.

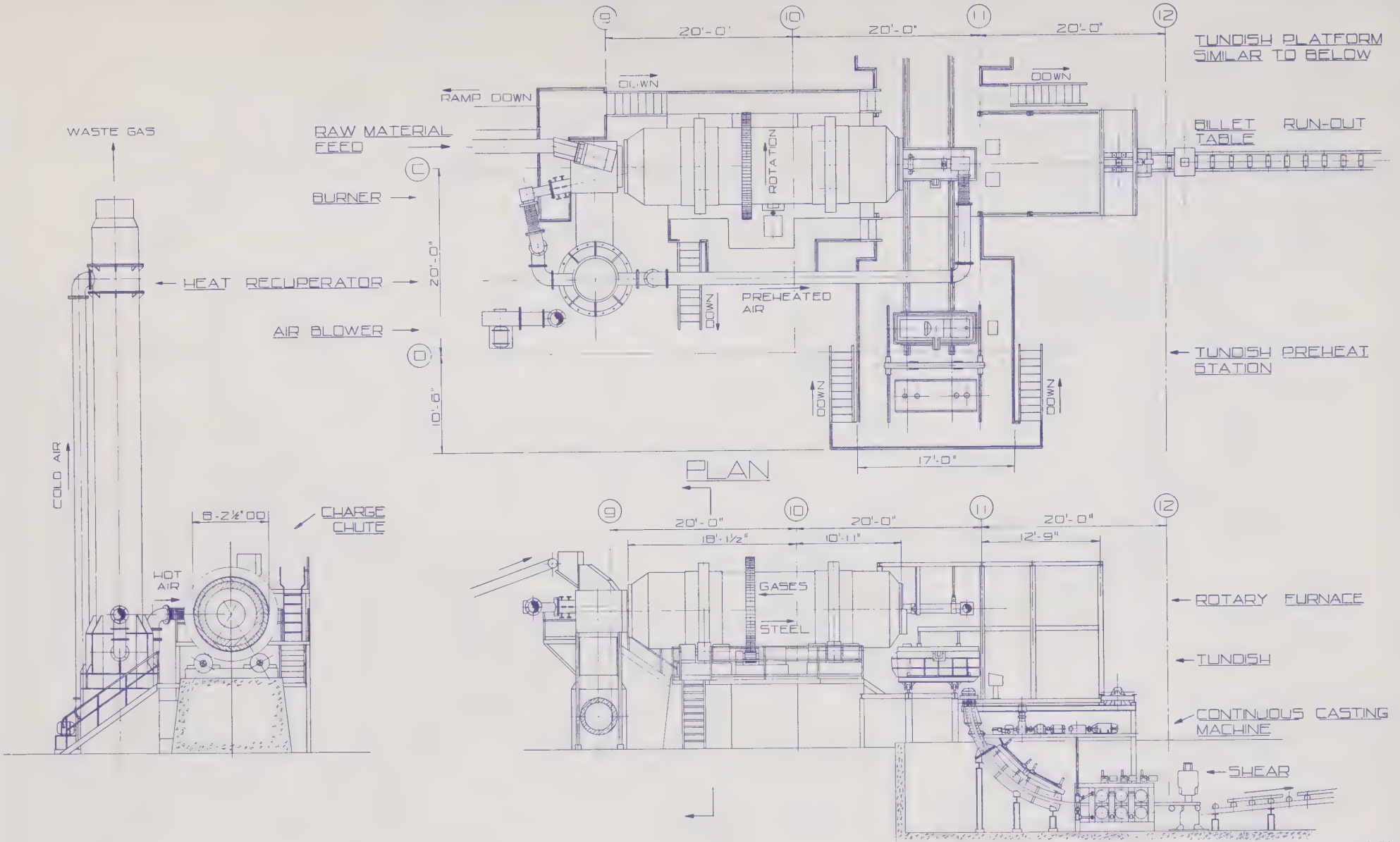
PACIFIC CONTINUOUS STEEL LIMITED

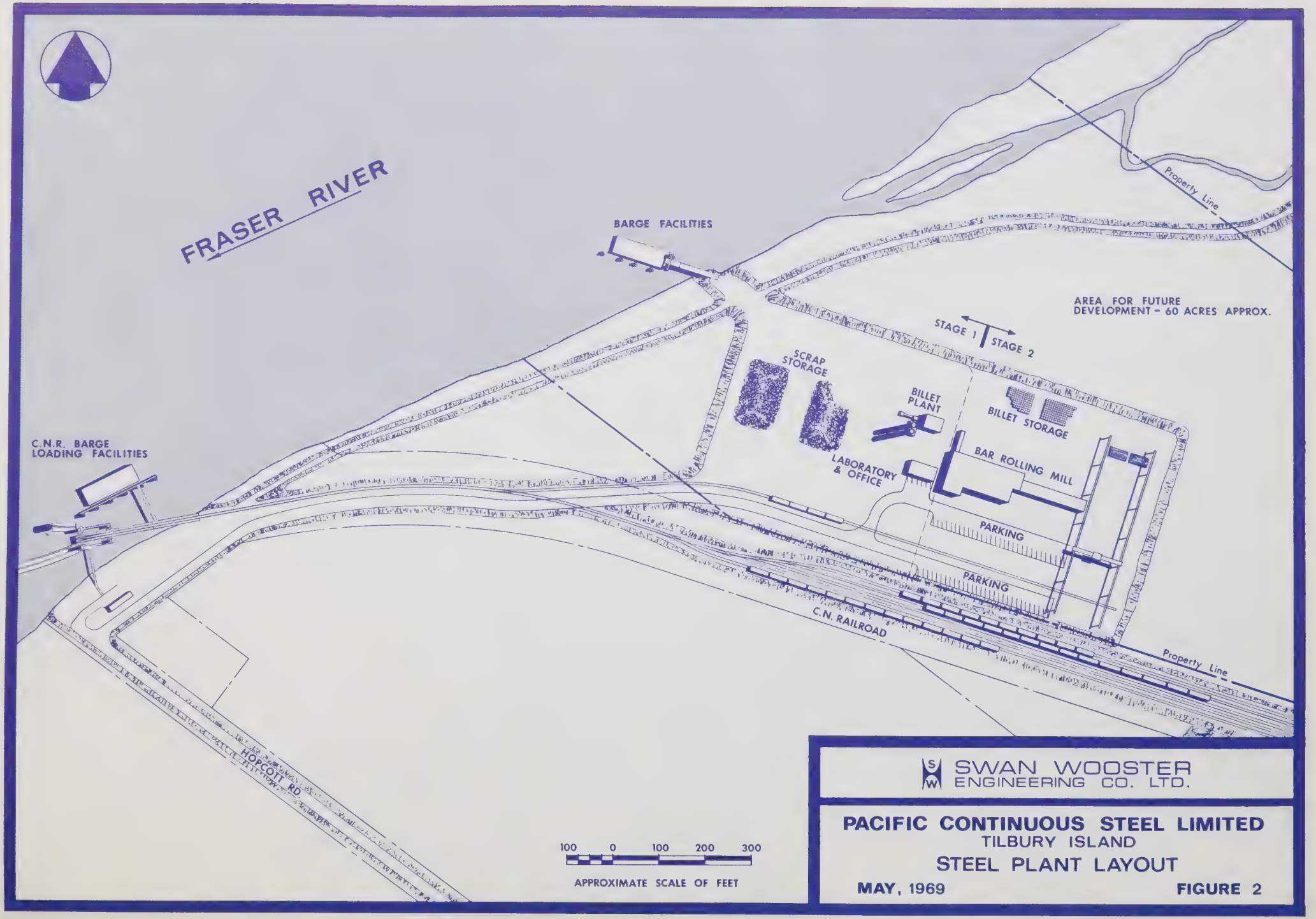
TILBURY ISLAND

STEEL PLANT SITE

MAY, 1969

FIGURE 1


WASTE GAS
RAW MATERIAL FEED
BURNER
HEAT RECUPERATOR
AIR BLOWER
COLD AIR
HOT AIR
8-2½" OD
CHARGE CHUTE
20'-0"
10'-6"
RAMP DOWN
DOWN
ROTATION
PREHEATED AIR
17'-0"
TUNDISH PLATFORM SIMILAR TO BELOW
BILLET RUN-OUT TABLE
TUNDISH PREHEAT STATION
PLAN
20'-0"
18'-1½"
10'-11"
12'-9"
GASES
STEEL
ROTARY FURNACE
TUNDISH
CONTINUOUS CASTING MACHINE
SHEAR
SECTION
ELEVATION
PRELIMINARY
W. L. SHERWOOD & COMPANY LTD.
ENGINEERS
PACIFIC CONTINUOUS STEEL LIMITED
FURNACE GENERAL LAYOUT
JULY 11 1969



SWAN WOOSTER
ENGINEERING CO. LTD.

PACIFIC CONTINUOUS STEEL LIMITED

TILBURY ISLAND

STEEL PLANT LAYOUT

MAY, 1969

FIGURE 2

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THE COMPANY

Pacific Continuous Steel Limited (the "Company") was incorporated on December 23, 1966 as a private company under the Companies Act of the Province of British Columbia by Memorandum of Association and was converted to a public company on September 10, 1969.

On the 20th day of March, 1967 the Company increased the number of authorized Common shares without nominal or par value from 10,000 to 1,000,000 shares and on August 29, 1969, the Company increased the number of authorized Common shares without nominal or par value from 1,000,000 Common shares to 3,000,000 Common shares. The address of the head office of the Company is 601, 850 West Hastings Street, Vancouver, British Columbia, and its registered office is located on the 16th Floor, 1177 West Hastings Street, Vancouver, British Columbia.

THE BUSINESS

The Company is in the business of creating a new basic steel manufacturing facility in British Columbia.

History

The initial formation of the Company was for the purpose of confirming the feasibility of new steelmaking facilities in British Columbia, and assessing the feasibility of creating such facilities. A study was developed for a major integrated steel plant with the emphasis on flat-rolled products including plate, sheet, strip and skelp for pipemaking. Steelmaking from iron ore concentrates obtained from ore deposits in the province was included as part of this evaluation. Because of the very substantial initial capital expenditure, these proposals were postponed in favour of the smaller billet plant (Stage I) and bar mill (Stage II) as outlined herein.

The Proposed Plant

In the view of the Company, the economic feasibility of both Stage I and Stage II operations have been confirmed. The Company proposes initially to construct a continuous steelmaking furnace employing the Sherwood Process (described below) and continuous casting machine for the production of steel billets which are to be exported for rerolling by other steel mills lacking melting capacity, or having a deficiency in melting capacity in relation to rolling capacity. The by-products are to be sold to foundries as stock for remelting purposes. This will be Stage I.

The proposed Stage II of production will be the construction of a steel rolling mill to convert the billets into concrete reinforcing steel and miscellaneous small bars for marketing mainly in British Columbia primarily to the construction industry. The accompanying Figures 1 and 2 depict these two stages of development on the Company's plant site.

The Site

The Company has acquired, by way of an Agreement for Sale, approximately 67.4 acres, located in the Municipality of Delta on the south shore of the main channel of the Fraser River. This site, illustrated in Figure 1, provides water depths of approximately 25 feet immediately offshore and is underlain by deep beds of sand and silt, providing firm foundation conditions not usually requiring pilings for buildings and equipment. The site is adjacent to a chemical plant operated by Dow Chemical of Canada Ltd. British Columbia Hydro & Power Authority proposes to construct a natural gas liquefaction and storage facility on property downstream.

The property is serviced by the Great Northern and Canadian National Railways, the latter operating a rail barge loading wharf on adjoining land. The Canadian National Railway has assured the Company that, subject to a mutually acceptable rental rate being agreed upon and subject to approval by Canadian National Railway Management, 2.5 acres of water frontage adjoining the Company property will be available to the Company on lease and that the Company will have first refusal on an additional 15 acres of adjoining property. No difficulty in concluding an agreement is anticipated by the Company or by the Canadian National Railway. The additional leased property will increase the shoreline from 1,250 feet to 1,720 feet and the total acreage available for current use and expansion from 67.4 acres to 84.9 acres.

Proposed Process Technology

The steel industry, in the last two decades, has seen active development of processes and equipment which have improved operations and lowered costs. As a guiding principle, the management of the Company is oriented in favour of the utilization of advanced technology, provided there is evidence the engineering principles involved are sound and the potential cost advantages justify the estimated risks. The particular requirements of the proposed facility are for techniques designed for a small-scale operation which will make it more competitive with larger ones, and which will reduce the minimum requisite capital cost for entry into the steel manufacturing business.

The Sherwood Process for continuous steelmaking is a new technique and the advantage of its adoption is a substantial potential saving in capital and operating cost. Also, present conventional steelmaking processes make steel in batches and, in line with trends in other industries, a continuous process is considered advantageous, particularly in view of its adaptability to automatic operation and control. Principal engineering features of this process are described in the September, 1968 issue of the Canadian Mining and Metallurgical Bulletin.

The Sherwood Process includes two configurations:

(a) Integrated process for steelmaking directly from iron ores or concentrates; and

(b) Non-integrated process for steelmaking from a metallic charge of scrap or sponge iron.

By licence agreement dated the 15th day of October, 1968 the Company acquired from W. L. Sherwood & Company Ltd. a licence until April 30, 1985 for rights to the non-integrated process for iron and steelmaking and the integrated process for iron and steelmaking. The rights are exclusive within the Province of British Columbia and Alberta and non-exclusive in all other Provinces of Canada. The licence includes Canadian Patent No. 784,165 issued April 30, 1968 for "Ferrous Metal Production", relating to the integrated process, No. 806,105 issued February 11, 1969 for "Continuous Steelmaking Method and Apparatus" and No. 819,651 relating to "Connection Apparatus for Sections of a Rotary Furnace". Pending patent application Serial No. 962,148 on which a Notice of Allowance has been received is also included in the Licence.

The Agreement provides that the licence is royalty free for the first single specific plant unit which is put into production by the Company. Subsequently $.75 per ton of fused iron or steel produced is to be paid for the integrated process and $.35 for the non-integrated process.

It is recognized by the Company that the grant of a patent is not necessarily complete assurance of the grantee's absolute exclusive right to exploit the invention disclosed therein and that the scope and validity of any patent can only be finally determined by a Court. Although the Company believes that the presently planned exploitation of its patents will not violate the patents of others, there is no assurance that patents do not exist upon which claims might be asserted by others against the Company.

Figure 3 illustrates the proposed Stage I Sherwood Process billet plant. The furnace consists of a cylindrical steel shell lined with refractory bricks which is rotated on steel tires and rollers. The furnace has two gas or oil-fired burners, one at the charge end for melting and one at the discharge end for controlling refining and tapping temperature of the steel. The furnace is fed continuously with prepared scrap and fluxing agents such as lime via a water-cooled feed chute. The charge is then melted down by concentrated heat from the charge end burner. The combustion air is preheated in a recuperator by means of heat extracted from the hot waste gases from the furnace. The rotating action continuously stirs the charge and promotes melting through alternate gas-to-wall and wall-to-charge heat transfer, to form a top layer of slag and a bottom layer of fused iron. After melting, refining between metal and slag is carried on under the influence of controlled furnace rotation and heating from the discharge end burner. The refined steel and slag are discharged by overflowing a specially designed annular discharge opening into a heated intermediate vessel, known as a tundish, in which final alloying and composition adjustment of the steel is conducted according to the customer's specifications for composition. The tundish is fitted with a stopper or slide-gate for pouring through a nozzle into the billet casting unit.

In evaluating feasibility of this project, a detailed technical report entitled "Prototype Steel Ingot

Plant Using the Sherwood Process" was prepared by W. L. Sherwood & Company Ltd. Dr. I. H. Warren, Professor of Metallurgy at the University of British Columbia, has reviewed the furnace operation and a letter of his comments is appended to this Prospectus as well as the summary and conclusions of the report.

The proposed facility, with estimated output in the range of 10 to 20 tons per hour, requires less than half the amount of capital, than does the usual alternative of a conventional electric-arc furnace with equivalent output. A potential operating cost advantage in excess of $5 per ton is projected. These potential cost savings are a factor in the Company's ability to profitably service the export market for steel billets.

Continuous billet casting for converting liquid steel into a form suitable for rerolling is another technique in which important advances have occurred during the past 10 years, and hundreds of such installations now exist. Up to now, however, continuous casting machines have been fed entirely with steel produced in batches. It is considered use of the proposed continuous steelmaking furnace, resulting in a continuous flow of steel at constant temperatures supplied directly to the casting machine, will enhance the advantages already realized by continuous casting.

The Company is in a position to assess and select those recent technological developments most advantageous to a new steel facility. Competitors with long established operations frequently are limited to less efficient factors built into their existing production units.

The rolling mill planned for Stage II is envisioned as a continuous, in-line system with average output rated at approximately 10 tons per hour on the smaller sizes, designed specifically for economy and minimum personnel requirements. A full range of sizes of reinforcing steel from No. 3 (⅜″) to No. 11 (1⅜″), as well as miscellaneous small bars including rounds, flats, squares, tees, channels and angles up to about 2½″ in size are to be produced. This type of mill is designed particularly to be flexible; and to make the smaller sizes of bars nearly as efficiently as the larger ones and to afford rapid changes in bar size for short production runs. It should therefore be advantageous for the economical production of small bars and for the filling of orders requiring rapid delivery. Final detail design and selection on this rolling mill facility, as well as financing for this stage, are to be undertaken during the construction and initial operating period of the billet plant.

The estimated capital cost for Stage II is $512,000 for rolling mill equipment and installation and $320,000 for site development, services and buildings, based on estimates provided respectively by D. C. Moulson, P. Eng., rolling mill consultant, and Swan Wooster Engineering Co. Ltd.

Raw Materials

Iron and steel scrap is the principal raw material for the proposed plant. Hedlin, Menzies & Associates Ltd., Consulting Economists, was retained to undertake the study on this supply. Its report covers the supply of scrap suitably prepared for processing in the proposed continuous steelmaking unit and the summary and conclusions of this study are appended hereto.

Fluxes, alloys, molds and other raw materials all are produced locally or available from local distributors. Price quotations from the appropriate suppliers have been obtained and used for estimating production costs.

Markets

Steel rolling mills are the principal customers for semi-finished steel billets and export sales to mills located in other countries are anticipated as the principal market. The Company has been in direct contact with a large number of prospective buyers of exported steel billets, and this market also studied by Hedlin, Menzies & Associates Ltd., according to the appended summary. It may be seen that the market demand is sufficiently large so that the output from the Stage I billet plant will have little influence on this total demand and it is anticipated that this market will absorb all the billets which the plant can produce. An average price expectation of $72 per ton F.O.B. over ten years has been projected by the consultants.

The British Columbia market for reinforcing steel and miscellaneous steel bars produced by the

Stage II rolling mill was also studied and the summary and conclusions of this study are appended hereto. The markets for steel bars in the United States and abroad are also to be actively investigated in the near future.

Earnings

Using the scrap costs and product price estimates, and the target production cost figures, Hedlin, Menzies & Associates Ltd. has prepared the appendix projection of potential earnings from the Stage I and Stage II facilities. These projections show that billet export sales are expected to be the main prospective source of earnings during Stage I and continuing after the Stage II bar mill begins operation, due to the billet plant being specifically designed to achieve lower capital and operating costs. It is expected savings will be directly reflected in profit margins resulting in a clear price advantage over competitors in the export market for semi-finished steel. It is also evident that the Stage II bar mill is also potentially profitable, by itself, when serving the British Columbia market, on the assumption that the billets are charged to the rolling mill at an equivalent price to that obtained on export sales.

The Stage I and Stage II facilities will occupy less than 15 acres of the Company's total available land site, with the remaining land in excess of 52 acres being available for future expansion. In the view of the Company, such expansion might include processing of iron concentrates from producing British Columbia mines.

It is the intention of the Company to actively investigate diversification of products, including flat-rolled steel production facilities, high-quality melting stock, cast iron products and steel rods for wiremaking, after the successful establishment of Stages I and II.

SHARE OFFERING AND PLAN OF DISTRIBUTION

The Company by this Prospectus offers to sell 400,000 of its Common shares as fully paid and non-assessable at and for the price of $4.00 per share subject to a commission in respect of some or all of such shares not exceeding $.28 per share. All such shares will be offered through registered securities dealers in the Province of British Columbia.

USE OF PROCEEDS

The estimated net proceeds to be derived by the Company from the sale of its 400,000 Common shares offered hereunder will be $1,488,000. Such proceeds will be used for the following purposes:

Purchase and Installation of furnace plant	$ 380,000
Purchase of continuous casting machine	200,000
Application to payments due on Agreement for Sale on the land acquired for the plant to December, 1971	190,000
Preparation of the land site, services and foundations	225,000
Various service buildings, portable and yard equipment	75,000
General overhead during construction and start-up	100,000
Engineering of rolling mill and future facilities	50,000
Working Capital	259,500
Payment of audit, legal and printing expenses in connection with this Prospectus	8,500
Total:	$1,488,000

Except for the portion required for working capital and until so required any excess may be invested in short term securities.

To complete construction of all facilities required for Stage I, the full sum of $1,488,000.00 is required. If the total proceeds of the offering under this Prospectus are received these proceeds will only be sufficient to finance Stage I of the operation and the Company will require additional financing before commencing Stage II. Should the offering not be fully subscribed, the Company will endeavor to negotiate the balance of the monies necessary from other sources. If 50% of the offering is not subscribed within 6 months of the date of this Prospectus, all monies received for share subscriptions (less commissions paid thereon) will be returned to the subscribers. During the interim period the proceeds of all subscriptions will be held by Montreal Trust Company and will be released only upon consent of the British Columbia Securities Commission.

SHARE AND LOAN CAPITAL STRUCTURE

Designation of Security	Amount Authorized	Amount Outstanding as of June 15, 1969	Amount Outstanding as of July 15, 1969	Amount to be Outstanding on Completion of Offering
LOANS				
(1) Agreement for Sale	$390,000	$390,000	$390,000	$200,000
SHARES				
Common Shares without par value	3,000,000	516,499	516,499	916,499

(1) Refer to the sub-heading "The Site" on page 6 and the heading "Material Contracts" on page 13 of this Prospectus for details of the security therefor.

DESCRIPTION OF SHARES

The Company is authorized to issue 3,000,000 Common shares without nominal or par value. Each holder of Common shares is entitled to one vote for each share held and to participate pro-rata in any distribution to shareholders upon liquidation of the Company. Shareholders are entitled to such dividends as may from time to time be declared by the Board of Directors of the Company out of funds legally available therefor. All the issued and outstanding Common shares of the Company, including those hereby offered, are fully paid and are not subject to further call or assessment by the Company. The Common shares have no pre-emptive or conversion rights and no provisions for redemption, purchase for cancellation, surrender or sinking or purchase funds. Provisions as to modifications, amendments or variations of such rights or provisions attaching to the Common shares are contained in the Companies Act of the Province of British Columbia.

DIRECTORS AND OFFICERS

The names, addresses and principal businesses or occupations in which each of the Directors and Officers of the Company have been engaged during the immediately preceding five years are as follows:

Name	Position & Office with Company	Principal Occupation
WILLIAM L. SHERWOOD 668 Baycrest Drive North Vancouver, B.C.	Director and President	Metallurgical Engineer, President, Pacific Continuous Steel Limited
C. DEAN DRICOS 3827 Bayridge Avenue West Vancouver, B.C.	Director	Regional Sales Manager, Quadra Steel Limited

Name	Position & Office with Company	Principal Occupation
GEORGE L. MORFITT 355 St. James Crescent West Vancouver, B.C.	Director	Chartered Accountant and Comptroller, J. Diamond & Sons Limited
J. HOWARD SISMEY 813 Winnipeg Street Penticton, B.C.	Director	General Superintendent, Pacific Pipe & Flume Limited
LEONARD A. BIDDLECOMBE 1246 Emery Place North Vancouver, B.C.	Secretary	Manager of Administration, Pacific Continuous Steel Limited, former Manager, Northern Electric Company Limited; Prince George office.

REMUNERATION OF DIRECTORS AND SENIOR OFFICERS

The following table sets forth the aggregate direct remuneration paid or payable by the Company to the Directors and senior Officers for the periods specified:

Reporting Period	Aggregate Direct Remuneration	Pension Plan Benefits	Other Remuneration
Jan. 1/68 — Dec. 31/68	$1,500.00	Nil	Nil
Jan. 1/69 — September 10/69	$8,000.00	Nil	Nil

PROMOTERS

Under the definition of "Promoter" contained in Section 2 of the British Columbia Securities Act, 1967, W. L. Sherwood & Company Ltd. and William L. Sherwood may be considered the Promoters of the Company in that they took the initiative in the founding and organizing of the Company but they have received no consideration in the form of shares, cash or otherwise from the Company for so acting. Shares were issued to W. L. Sherwood & Company Ltd. and William L. Sherwood as follows:

Name	Shares	Cash Paid
W. L. Sherwood & Company Ltd.	8	$ 8.00
W. L. Sherwood & Company Ltd.	11,005	5,552.50
W. L. Sherwood & Company Ltd.	150,000	7,500.00 (1)
W. L. Sherwood & Company Ltd.	150,000	22,500.00 (1)
William L. Sherwood	2	2.00
William L. Sherwood	7,250	3,625.00

William L. Sherwood in his capacity as President, has been paid a management fee of $500.00 per month from the first day of October, 1968 for administrative services.

(1) W. L. Sherwood & Company Ltd. received 150,000 Common shares of the Company upon settlement of an account in the amount of $7,500 and subsequently purchased a further 150,000 shares with the use of the proceeds of an account in the amount of $22,500. The aforementioned accounts were in the nature of engineering services performed by W. L. Sherwood & Company Ltd. for Pacific Continuous Steel Limited. W. L. Sherwood & Company Ltd. has subsequently sold 14,000 of its shares to existing shareholders and Directors.

ESCROWED SECURITIES

The following Common shares have been deposited with Montreal Trust Company pursuant to an agreement dated June 18th, 1969 providing, inter-alia that except with the written consent of the British Columbia Securities Commission, and if the Company should be listed on the Vancouver Stock

Exchange, then also subject to the consent of the Vancouver Stock Exchange, holders of escrow shares will not sell, or transfer the said shares.

Designation of Class	Number of Shares held in Escrow	Percentage of Class
Common Shares	307,252	10.24%

PRIOR SALES

During the twelve month period prior to the date of the Prospectus the Company issued the following shares:

Number of Shares	Price	Cash Received
150,000	$ .15	$22,500.00*
61,748	.37-½	23,155.50
80,541	.50	40,270.50
74,200	1.00	74,200.00

With the exception of the 150,000 shares issued at $ .15 per share all of the shares have been voluntarily pooled with Montreal Trust Company subject to release by the British Columbia Securities Commission at the expiration of 30 days after the completion of the primary distribution of all the shares offered by this Prospectus.

* The 150,000 treasury shares issued at $.15 per share represent a portion of those shares held in escrow by Montreal Trust Company and referred to under the heading "Escrowed Securities".

PRINCIPAL SHAREHOLDERS

Set forth hereunder are the particulars of the principal shareholders of the Company as of the date of this Prospectus:

Name and Address	Designation of Class	Type of Ownership	Number of Shares owned	Percentage of Class
W. L. Sherwood & Company Ltd. 601, 850 West Hastings Street Vancouver 1, B.C.	Common	Direct, of Record & Beneficial	297,013	57.5%

As of the date of this Prospectus the number and percentage of each class of shares of the Company beneficially owned directly or indirectly by all the Directors and senior Officers of the Company as a group is as follows:

Designation of Class	Number of Shares Beneficially Owned	Percentage of Class
Common	328,265	63.5%

MANAGEMENT INTEREST

W. L. Sherwood & Company Ltd. performs professional engineering services for the Company on a regular basis. See items referred to under the headings "Promoters" and "Remuneration of Directors and Senior Officers".

AUDITORS

Peat, Marwick, Mitchell & Company
900 West Hastings Street
Vancouver, British Columbia

MATERIAL CONTRACTS

Particulars regarding every material contract entered into by the Company within two years preceding the date hereof, other than in the ordinary course of business, are as follows:

1. A licence agreement dated the 15th day of October, 1968 made between W. L. Sherwood & Company Ltd. and the Company granting the Company rights to the Sherwood Process for continuous steelmaking. For details of the agreement refer to the heading "Proposed Process Technology" on Page 7 of this Prospectus.

2. An Agreement for Sale made the 15th day of May, 1969 between Elmer John Palmer and the Company whereby the Company agreed to purchase approximately 67.4 acres located in the Delta Municipality for the sum of $400,000.

The foregoing Material Contracts to which the Company is a party may be inspected at the registered office of the Company during normal business hours while primary distribution of the securities offered hereunder is in progress and for a period of 30 days thereafter.

OTHER MATERIAL FACTS

The Company owns 500,000 issued shares representing 99.17% of the total outstanding issued shares in a new mining exploration company, Consteel Explorations Ltd. (N.P.L.) which has been set up for the purpose of prospecting and developing promising prospects for iron ore. It presently holds 28 mineral claims located approximately 12 miles northwest of Princeton, B.C. in an area known to contain low grade iron mineralization. The Company does not contemplate any direct investments in this exploration company and none of the proceeds of this issue of securities are to be appropriated for this purpose. W. L. Sherwood is a Director and President of Consteel Explorations Ltd. (N.P.L.).

ASSETS

Current Assets:		
Cash		$ 5,806
6¾ % short-term deposits		50,000
Sundry accounts receivable		283
Total current assets		56,089
Investment in subsidiary company, Consteel Explorations Ltd. (N.P.L.), 500,000 shares at cost (Note 1)		10,000
Land, at cost		400,000
Patent licence, at cost (Note 2)		1
Deferred charges:		
Development expenses, per accompanying statement	$ 89,397	
Incorporation costs	279	89,676
		$555,766

APPROVED ON BEHALF OF THE BOARD:

W. L. SHERWOOD, Director

GEORGE L. MORFITT, Director

See accompanying notes to financial statements.

STEEL LIMITED

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LIABILITIES AND SHAREHOLDERS' EQUITY

Current liabilities:		
Sundry accounts payable		$ 1,130
Current portion of Agreement for Sale (Note 3)		90,000
Total current liabilities		91,130
Agreement for Sale payable (Note 3)	$390,000	
Less current portion above	90,000	300,000
Shareholders' equity:		
Capital stock:		
Common shares of no par value. Authorized 1,000,000 shares; issued for cash 516,499 shares	166,636	
Less subscriptions receivable	2,000	164,636
		$555,766

AUDITORS' REPORT TO THE DIRECTORS

We have examined the balance sheet of Pacific Continuous Steel Limited as of June 15, 1969 and the statements of development expenses and source and application of funds for the period from the date of incorporation, December 23, 1966 to June 15, 1969. Our examination included a general review of the accounting procedures and such tests of accounting records and other supporting evidence as we considered necessary in the circumstances.

In our opinion, these financial statements present fairly the financial position of the Company at June 15, 1969 and the source and application of its funds for the period then ended, in accordance with generally accepted accounting principles.

Vancouver, British Columbia
June 18, 1969

PEAT, MARWICK, MITCHELL & COMPANY
Chartered Accountants.

PACIFIC CONTINUOUS STEEL LIMITED

STATEMENT OF SOURCE AND APPLICATION OF FUNDS

From date of incorporation, December 23, 1966 to June 15, 1969

	January 1, 1969 to June 15, 1969	Year ended December 31, 1968	1967
Funds provided:			
Proceeds from sale of capital stock	$112,773	44,353	7,510
Funds used:			
Purchase of land	400,000		
Less non-current portion of agreement for sale	300,000		
	100,000		
Purchase of patent licence	1		
Incorporation of development expenditures	35,903	41,905	11,868
Investment in Consteel Explorations Ltd.	10,000		
Total funds used	145,904	41,905	11,868
Working capital increase (decrease)	(33,131)	2,448	(4,358)
Working capital deficiency at beginning of year	(1,910)	(4,358)	
Working capital deficiency at end of year	$(35,041)	(1,910)	(4,358)

See accompanying notes to financial statements.

PACIFIC CONTINUOUS STEEL LIMITED

STATEMENT OF DEVELOPMENT EXPENSES

From date of incorporation, December 23, 1966 to June 15, 1969

	Total	January 1, 1969 to June 15, 1969	Year ended December 31, 1968	1967
Engineering expenses	$53,581	$19,499	$24,124	$ 9,958
General and administrative expenses:				
Bank charges	319	28	291	
Insurance	87	87		
Rent of furniture and equipment	1,046	481	565	
Legal	1,111	50	477	584
Subscriptions	797	529	268	
Management services	4,500	3,000	1,500	
Miscellaneous	560	483	77	
Office	5,412	2,709	2,435	268
Salaries	2,254	2,254		
Printing	1,266	59	693	514
Promotional services	3,000		3,000	
Public relations	148		148	
Secretarial services	3,935	1,858	2,077	
Finance and market studies	6,445	2,645	3,800	
Telephone and telegraph	1,367	654	713	
Travel and entertainment	4,135	2,133	1,737	265
	36,382	16,970	17,781	1,631
	89,963	36,469	41,905	11,589
Less sundry income	566	566		
	$89,397	$35,903	$41,905	$11,589

See accompanying notes to financial statements.

NOTES TO FINANCIAL STATEMENTS
June 15, 1969

1. The only asset of the subsidiary company is mineral claims in the Similkameen Mining Division. A consolidated balance sheet has not been prepared because, in the opinion of the directors, the business of the subsidiary is alien to that of the parent company.
2. The company has entered into a licence agreement with the holder of certain issued Canadian patents and pending patent applications in connection with ferrous metal production and continuous steel making method and apparatus. The licence is exclusive within the provinces of British Columbia and Alberta, non-exclusive in all other provinces of Canada until April 30, 1985 and provides for no royalty on the first specific plant unit. Thereafter a royalty of 35c or 75c per ton is payable, depending upon the process used.
3. The Agreement for Sale is payable on the purchase of land for a plant site in installments of $15,000 on November 15, 1969, $75,000 on May 15, 1970 and $100,000 on December 31, 1970 at no interest. The balance of $200,000 is payable in equal installments of $50,000 commencing December 31, 1971 until December 31, 1974 with interest at 9% per annum.

PURCHASER'S STATUTORY RIGHT OF WITHDRAWAL AND RESCISSION

Sections 61 and 62 of the British Columbia Securities Act provide, in effect, that where a security is offered to the public in the course of primary distribution:

(a) A purchaser has a right to rescind a contract for the purchase of a security, while still the owner thereof, if a copy of the last Prospectus, together with financial statements and reports and summaries of reports relating to the securities as filed with the British Columbia Securities Commission, was not delivered to him or his agent prior to delivery to either of them of the written confirmation of the sale of the securities. Written notice of intention to commence an action for rescission must be served on the person who contracted to sell within 60 days of the date of delivery of the written confirmation, but no action shall be commenced after the expiration of three months from the date of service of such notice.

(b) A purchaser has the right to rescind a contract for the purchase of such security, while still the owner thereof, if the Prospectus or any amended Prospectus offering such security contains an untrue statement of a material fact or omits to state a material fact necessary in the light of the circumstances in which it was made, but no action to enforce this right can be commenced by a purchaser after expiration of 90 days from the later of the date of such contract or the date on which such Prospectus or amended Prospectus is received or is deemed to be received by him or his agent.

Reference is made to the said Act for the complete text of the provisions under which the foregoing rights are conferred.

CERTIFICATES

The foregoing constitutes full, true and plain disclosure of all material facts relating to the securities offered by this Prospectus as required by Part VII of the British Columbia Securities Act, 1967 and the regulations thereunder.

(Signed) WILLIAM L. SHERWOOD,
Director and Promoter

(Signed) C. DEAN DRICOS,
Director

(Signed) GEORGE L. MORFITT,
Director

(Signed) L. A. BIDDLECOMBE for
J. HOWARD SISMEY, Director

(Signed) W. L. SHERWOOD, President
W. L. SHERWOOD & COMPANY LTD.,
Promoter

3806 West 9th Ave.,
Vancouver 8, B.C.
April 14, 1969.

Mr. W. L. Sherwood,
President,
Pacific Continuous Steel Limited,
744 West Hastings Street,
Vancouver 1, B.C.

Dear Mr. Sherwood:

I have examined as requested the report of January 21st entitled "Prototype Steel Ingot Plant Using the Sherwood Process". The subject matter of this report is concerned basically with a proposal to construct a small experimental rotary furnace to melt scrap steel. The furnace has been designed with the objective of utilizing shredded scrap or, presumably, prereduced pellets as raw material, and the point is made that it is intended to both feed input and discharge product, continuously. The furnace itself resembles a Rotor steel-making unit in construction but differs with respect to operation in that heat is generated in a Rotor by oxygen injection. The Sherwood furnace is also somewhat similar to a Basic Open Hearth but differs in that the 'hearth' rotates and it therefore can be classified essentially as a kiln type open hearth unit. The fuel for melting can either be natural gas or oil. Since the Sherwood furnace has these features resembling other known steel making units it is very reasonable to expect that it will function as a steelmaking unit when fed with the selected materials of shredded scrap or prereduced pellets. The most significant feature of the proposal is that the furnace be operated on a continuous basis rather than intermittently as are conventional steelmaking processes. The major operational features of the furnace which require proving on a pilot scale are (a) specific fuel consumption per ton of steel (b) specific refractory consumption per ton of steel (c) the amount of short circuiting in the furnace during constant operation. The latter factor will determine the refining potential of the furnace, its through-put, and of course the quality of the product.

An additional feature of the furnace is that it may have the potential to reduce investment capital required per ton of output, particularly in small steelmaking operations. If the projected output can be achieved from the furnace unit in pilot operation then this feature will have been substantiated since the investment required is certainly below that known to be necessary for an electric furnace of comparable annual capacity. The cost components for the required investment as given in the report have been studied and would seem to be reasonable on the basis of available information.

Continuous flow processes have been proposed for steelmaking by many engineers and it would seem that on this basis alone a pilot study of the furnace would be warranted. If the unit operates as projected, then it might be incorporated into a small steelmaking facility if the total economic factors were favourable. Construction and operation of the Sherwood Furnace is recommended, therefore, provided that it is on a venture capital basis with full recognizance of the areas of uncertainty outlined in this letter.

Sincerely,

(Signed) I. H. WARREN
I. H. WARREN, B.SC. PH.D.,
Associate Professor of Metallurgy.

PROTOTYPE STEEL INGOT PLANT USING THE SHERWOOD PROCESS

SUMMARY AND CONCLUSIONS

1. The Sherwood Process for continuous steelmaking is a proposed new process and equipment design having the objective of reducing capital costs and operating costs in comparison to conventional steelmaking processes. It includes two configurations: (a) integrated process for steelmaking directly from iron ores or concentrates, and (b) non-integrated process for steelmaking from a metallic charge of scrap or sponge iron.

2. This process is conducted in rotary furnace equipment of special design and includes a number of principal features common to established commercial processes such as the open-hearth, electric-arc and Kaldo processes; however, the overall combination of process and equipment elements still requires proving out by actual operating experience.

3. Technical and economic considerations indicate a 10 ton-per-hour prototype unit for non-integrated steelmaking from a prepared scrap charge is the logical selection to obtain the operating experience required to establish that commercially acceptable ingots can be produced at competitively advantageous cost.

   Successful completion of trials on the proposed prototype unit of the non-integrated process would facilitate assessment of extending to steelmaking from ore via the integrated process (a).

4. The estimated capital cost of this prototype installation of the non-integrated process (b), exclusive of site and services, is approximately $280,000.00. An additional contingency allowance of approximately $100,000.00 is indicated to allow for estimating error and possible design changes during the detail engineering and trial phases. Subject to satisfactory operating results, the investment could prove to be less than half the capital cost for the alternative of an equivalent capacity conventional electric-arc furnace shop.

5. Projected operating costs of the prototype unit on a production basis are estimated at $16.30 per ton above scrap cost as a target value, which also is indicated to be significantly lower than that obtained with an equivalent capacity electric-arc furnace facility. It is shown the maximum direct conversion cost is unlikely to be higher than $23.00 per ton under regular production conditions.

6. A series of operating trials on the prototype installation would require an overall crew up to 20 men, 2 - 4 months to complete, and to process 2600 tons of scrap raw material on a process development basis, an overall budget, including inventory, of approximately $200,000.00 should be provided.

7. In the event operating trials are carried to a satisfactory conclusion, that is, it is shown commercial specification ingots are consistently produced at costs close to the projected target values, the prototype installation should then be applicable as a production unit for supplying ingots to a bar rolling mill on a commercial basis, provided other economic and technological factors are favourable to such a steel manufacturing business.

W. L. Sherwood, P. Eng.

WLS/ct
January 21, 1969

1111 WEST HASTINGS STREET, VANCOUVER 1, B.C.—TELEPHONE (604) 684-5301

HEDLIN MENZIES
HM
& associates LTD.

ESTIMATES OF NET EARNINGS AND CASH FLOW OF A BILLET PLANT AND ROLLING MILL FACILITY

Statements covering the first 10 years of operation of the steel mill facility proposed for Greater Vancouver by Pacific Continuous Steel Limited

August, 1969

Hedlin Menzies and Associates has prepared the following estimates of net earnings and cash flow, Tables 1 and 2, covering the first ten years of operation of the steel mill facility proposed by Pacific Continuous Steel Limited.

The sales revenue figures are based on price forecasts and sales projections made by Hedlin Menzies and Associates. The summary and conclusions of the Hedlin Menzies market studies are reproduced in Appendix A of this report.

"Cost of Sales" figures, with the exception of the cost of scrap steel, are based on capital and operating cost data supplied to Hedlin Menzies by Pacific Continuous Steel Limited and contained in reports by W. L. Sherwood and Company Ltd., Swan Wooster Engineering Co. Ltd., and D. C. Moulson, P.Eng. Data was also obtained from the report "Prototype Steel Ingot Plant Utilizing the Sherwood Process", dated January 21, 1969. The cost of scrap is based on an analysis of the scrap iron and steel market carried out by Hedlin Menzies. The main conclusions of this study are shown in Appendix A of this report.

The earnings and cash flow of Stage I, the billet plant operation, are calculated on the basis of a first year output of billets of 50,000 tons per year increasing to 98,000 tons per year in the tenth year.

It is assumed that Stage II — the rolling mill — will be brought into production one year later than the billet plant and that production will increase from 15,000 tons per year in its first year of operation to 40,000 tons per year in the ninth year. The raw material for the rolling mill will be billets from the billet plant charged, for earnings estimate purposes, at a cost to the rolling mill operation of $72 per short ton. This is the same as the projected price at which the billets are assumed sold by the billet plant to the outside market.

The hourly production of the Stage I billet plant is anticipated to be 15 tons per hour according to estimates supplied by Pacific Continuous Steel Limited. The furnace size which is now proposed has been increased from the originally envisaged 21′ length by 7.5′ diameter to 30′ length by 8′ diameter (a 63% increase in volume) to yield the rated output of 15 tons per hour, plus material and gas handling capacity to accommodate a maximum of 20 tons per hour throughput. A continuous billet caster has also been selected in place of the originally conceived ingot wheel caster. Table 6 shows details regarding number of shifts, shift hours, downtime and delays, and effective operating hours per year which were used to estimate the total annual outputs.

Accepting as accurate the cost data and information as to rates of production supplied by Pacific Continuous Steel, it is the opinion of Hedlin Menzies that the income statements produced in Tables 1 and 2 are a realistic estimate of what may be expected to occur in terms of net earnings and cash flows.

A detailed breakdown of the capital and operating cost figures which were used in preparing the statements is shown in Tables 3 to 10.

TABLE 1

Estimated Income and Cash Flow Projection
Stage I — Billet Plant

($000's)

Year:	1	2	3	4	5	6	7	8	9	10
Sales tons	50	60	75	78	82	85	89	92	96	98
Sales revenue [1]	3600	4320	5400	5616	5904	6126	6408	6624	6912	7056
Cost of sales [2]	2746	3294	4192	4346	4551	4712	4953	5114	5319	5437
Operating income	854	1026	1208	1270	1353	1408	1455	1510	1593	1619
Depreciation [3]	135	110	89	73	58	48	40	32	27	23
Interest [4]	80	72	64	56	48	40	32	24	16	8
Taxable Earnings	639	844	1055	1141	1247	1320	1383	1454	1550	1588
Income taxes [5]	320	422	528	571	624	660	692	727	775	794
Net earnings	319	422	527	570	623	660	691	727	775	794
Loan repayments	80	80	80	80	80	80	80	80	80	80
Retained earnings applied to working capital [6]		100	150	30	30	30	30	30	30	30
Cash flow	374	352	386	533	571	598	621	649	692	707
Cumulative cash flow	374	726	1112	1645	2216	2814	3435	4084	4776	5483
Net earnings per share [7]	$.35	$.46	$.58	$.62	$.68	$.72	$.76	$.80	$.85	$.87

1. Based on an average selling price for billets of $72 (Cdn.) per short ton f.o.b. the plant for the first ten years of production.
2. Based on an average scrap cost, including preparation, of $35 per ton at 50,000 tons per year, $36 at 60,000 tons and $37 at 75,000 tons and above, throughout the ten-year period. All wage rates, including sales and administration wages, have been increased at the rate of 4% per year compounded. Other direct operating costs have been assumed to increase in direct proportion to production. Administration and sales costs other than salaries have been assumed to remain constant.
3. Depreciation expense has been calculated as follows:
   Machinery and equipment — $630,000 @ 20% declining balance
   Buildings, services, etc. — $185,000 @ 5% declining balance
   These are the rates prescribed by the Income Tax Act of Canada.
4. The total capital requirement of $2,280,000 is assumed to be financed by $1,480,000 equity capital and $800,000 debt capital. Debt capital is assumed to carry an interest rate of 10% per year and is to be repaid at a rate of $80,000 per year.
5. An effective rate of income tax of 50% has been used.
6. Additional working capital requirements have been estimated at approximately $100,000 for each 10,000 ton increase in the rate of yearly production.
7. Calculated on the basis of 916,499 shares outstanding throughout the ten year period.

TABLE 2

Estimated Income and Cash Flow Projection
Stage II — Rolling Mill

($000's)

Year:	1	2	3	4	5	6	7	8	9	10
Sales - tons		15	15	20	25	25	30	35	40	40
Sales revenue [8]		1650	1650	2200	2750	3075	3690	4305	4920	4920
Cost of sales [9]		1474	1481	1958	2431	3442	2925	3413	3912	3932
Operating income		176	169	242	319	633	765	892	1008	988
Depreciation [10]		100	81	67	55	46	38	32	27	23
Interest [11]		110	98	86	74	62	50	38	26	14
Taxable earnings		(34)	(10)	89	190	525	677	822	955	951
Income taxes		—	—	45	95	263	339	411	478	476
Net earnings		(34)	(10)	44	95	262	338	411	477	475
Loan repayments		120	120	120	120	120	120	120	120	140
Retained earnings applied to working capital [12]		—	—	65	65	—	65	65	65	—
Cash flow		(54)	(50)	(74)	(35)	188	191	258	319	358
Cumulative cash flow		(54)	(104)	(178)	(213)	(25)	166	424	743	1101

Combined Income and Cash Flow Projections
Stage I and Stage II

	1	2	3	4	5	6	7	8	9	10
Total cash flow	374	298	336	459	536	786	812	907	1011	1065
Total cumulative cash flow	374	672	1008	1467	2003	2789	3601	4508	5519	6584
Total net earnings	319	388	517	659	718	922	1029	1138	1252	1269
Total per share earnings	$.35	$.42	$.56	$.72	$.78	$1.00	$1.12	$1.24	$1.37	$1.38

8. Calculated on the basis of an average selling price estimated at $110 per ton during years 2, 3, 4, and 5, and $123 per ton thereafter.
9. The cost of billets to the rolling mill has been taken as $72 Cdn. per short ton, the same price as that assumed to be received by the billet plant from foreign sales of billets.
10. Depreciation expense has been calculated as follows:
    Machinery and equipment — $550,000 @ 20% declining balance
    Buildings, services, etc. — $250,000 @ 5% declining balance
11. The total capital requirement of $1,112,000 for Stage II is assumed to be financed by debt capital, carrying an interest rate of 10% and repaid at a rate of $120,000 per year.
12. Additional working capital requirements have been estimated at approximately $65,000 for each 5000 ton increase in annual production rate.

TABLE 3

Capital Cost and Working Capital Summary

Stage I — Billet Plant	
Purchase and installation of furnace, and auxiliary equipment (including contingency allowance)	$ 380,000
Purchase of continuous casting machine	200,000
Purchase of land	400,000
Preparation of site, services, wharf and foundations	225,000
Laboratory, service buildings, yard equipment and other portable equipment	75,000
Plant capital cost	$1,280,000
General overhead during construction and start-up	$ 100,000
Allowance for start-up expense	100,000
Raw material inventory allowance	250,000
Finished goods inventory and accounts receivable allowance	550,000[13]
Working capital	$1,000,000
Total Stage I	$2,280,000
Stage II — Rolling Mill	
Rolling mill equipment and installation	$ 512,000
Preparation of site, services and buildings	320,000
Plant capital cost	$ 832,000
General overhead during construction and start-up	40,000
Allowance for start-up expense	40,000
Bar inventory and accounts receivable allowance	200,000[14]
Additional working capital	$ 280,000
Total Stage II	$1,112,000

13. This is the necessary working capital at a 50,000 ton per year level of output. Finished goods inventory and accounts receivable allowance assumes production at a rate of approximately 4,000 tons per month, the first shipments of billets loaded 6 weeks after start of production, and payment terms of 30 days from completion of loading. Cost of inventory is calculated on the basis of $54.78 per ton.
The raw material inventory allowance assumes 6,000 tons of scrap, alloys, fluxes, etc., at a cost of approximately $40 per ton.

14. This is the necessary working capital at a 15,000 ton per year level of production. It assumes an approximate 3½ month period of production before initial payment of receivables.

A. THE MARKET FOR STEEL BILLETS

Pacific Continuous Steel's proposed output of steel billets (carbon rerolling grade) is projected to rise from 50,000 short tons to 100,000 short tons over the period 1970 to 1980. Billets available for direct sale to export markets would range from approximately 35,000 to 65,000 short tons per year over this period, after deducting the estimated requirements of the Pacific Continuous Steel rolling mill facility.

An addition of 35,000 to 65,000 short tons (the approximate range of quantities which could be available for export sale) to the supply of billets would not of itself have an appreciable impact on the world billet market or on billet prices. All output from the Pacific Continuous Steel plant would be saleable at prevailing price levels.

It is our opinion based on discussions and correspondence we have had with steel companies and brokerage firms experienced in this area of sales, and on information supplied to us by Pacific Continuous Steel that a price of $72 Cdn. per short ton, f.o.b. the Pacific Continuous Steel plant, is a reasonable estimate of the price to be expected in the 1970-1980 period. This is equivalent to a price of approximately $75 Cdn. per short ton f.o.b. Vancouver, stowed and trimmed.

This figure of $75 per ton is lower than recent and present day prices which have been in the order of $80 Cdn. to $90 Cdn. per short ton, but higher than the longer term past prices of $60 Cdn. to $70 Cdn. per short ton. We see current price levels continuing to perhaps the end of 1970 with some softening thereafter to prices in the $70 to $80 range. A figure of $75 Cdn. per short ton over the whole period seems realistic.

It must be pointed out that the above prices are predicated on sales of billets to a broker or commission merchant on a direct sales basis. Should Pacific Continuous Steel be able to negotiate sales directly with a final purchaser the net-back to the mill would be higher so that the forecast mill price of $72 per ton price suggested above would be a conservative one.

On brief examination it would appear that sales to U.S. West Coast areas or to Mexico would offer the best net-backs to the mill.

B. THE MARKET FOR REINFORCING BAR AND OTHER HOT ROLLED BAR SIZE PRODUCTS

The market area which can be competitively reached from a Vancouver mill includes most of British Columbia with the exception of the northeast portion which is closer and more advantageously supplied from Edmonton. Bar sales in Washington State and other foreign areas have not been included. Significant sales could be made in these markets but this would nearly certainly result in lower net prices to Pacific Continuous Steel. This would be the case with respect to domestic as well as foreign sales due to anti-dumping type legislation.

The product range which Pacific Continuous Steel plans to produce comprises reinforcing bar in the #3 to #11 size range, small rounds and squares to 1½″ dimension, flats to 3½″ width, and small angles and channels up to 2½″ size. Specialty items such as steel fence posts and sign posts could also be produced if volume warrants.

The normal present demand in the B.C. market area for reinforcing bar is in the range of 60,000 to 80,000 tons per year. The demand for hot rolled bar size products in the size range which would be produced by Pacific Continuous Steel Limited is about 35,000 tons per year. Total present demand then for products which would be produced by Pacific Continuous is approximately 100,000 tons per year.

We forecast a continuation, to 1980, of the past 6% annual growth rate in the consumption of hot rolled steel mill products in British Columbia. This would mean a demand in 1980 nearly double present levels — i.e., a demand of nearly 200,000 tons for those products producible by Pacific Continuous Steel.

Most of the area demand for reinforcing bar and a large part of the demand for other bar is presently supplied by Western Canada Steel Ltd. of Vancouver, the only producer in British Columbia. We

would estimate their present output levels at about 90,000 tons per year — 55,000 tons of reinforcing steel and 35,000 tons of other hot rolled bar and bar size structurals. Offshore imports of reinforcing steel accounted for not more than 5,000 tons of total supply in 1968 and we estimate offshore imports of other bar, for distribution in B.C., were in the order of 15,000 tons. Small amounts of reinforcing bar and other bar in size ranges not produced by Western Canada Steel also move into B.C. from other Western Canada mills.

In view of the total present demand of approximately 100,000 tons per year for Pacific Continuous size material we think it reasonable to assume that the new mill could achieve a penetration into the market of 15,000 tons per year in the initial period of operation. After the mill has become established, say after the first 3 to 5 years, and total B.C. demand has grown, increasing output levels should be achieved — we would think a production level by Pacific Continuous of 40,000 tons per year by 1980 would be realistic. In our opinion however this amount of penetration would be attained only if Pacific Continuous produced the full range of reinforcing bar sizes (with the possible exception of #14's and #18's) and at least as full a range of other bar sizes as outlined above. Reinforcing steel of specification A.432 and A.431 must be produced. It is of course imperative that the new mill must be very competitive in terms of price, quality, delivery, and service.

Present prices of reinforcing bar supplied to the distributor are believed to be in the order of $5.50/cwt to $6.00/cwt. No. 3 bars and #14's and #18's are priced about $0.50/cwt extra. Other hot rolled bar in the smaller sizes which would be produced by Pacific Continuous appear to be priced in the range of $6.00 to $7.00/cwt. We would expect that the entry of a new mill in Greater Vancouver would certainly result in at least an initial downward pressure on prices. Price levels very likely lower than present ones should be expected for the first 3 to 4 years of production at least. Also the possibility of a price war resulting in very much lower prices cannot be ignored.

Even allowing that Pacific Continuous Steel will produce a preponderance of small size and therefore higher priced members, we would suggest that for feasibility analysis purposes an average reinforcing bar price no higher than $5.25/cwt be assumed for the first four years of production, and no higher than $6.00/cwt thereafter to 1980. A realistic price for other bar we feel would be $6.00/cwt for the first four years, and $6.50/cwt once the mill is established.

C. THE SCRAP IRON AND STEEL MARKET

The Sherwood rotary furnace steelmaking process proposed by Pacific Continuous Steel would utilize steel scrap exclusively as the metallic charge. Because of the continuous feed feature of the process the maximum desirable size of scrap pieces would be 12″ x 12″.

Maximum present demand for scrap in the Greater Vancouver area, including export demand, is about 100,000 tons per year. The largest consumer is Western Canada Steel Ltd. who use in the order of 40,000 to 50,000 tons per year. The billet plant and rolling mill facility proposed by Pacific Continuous Steel would consume 50,000 tons of scrap in the first year, 80,000 tons per year by the third year, and approximately 100,000 tons in the tenth year. We do not feel the Vancouver market can support an increase of this magnitude in the demand for scrap iron and steel without upward pressure being exerted on price.

Preliminary indications from scrap processors in Seattle, Tacoma, and Vancouver suggest that the present price of shredded material delivered in Vancouver would be $34 to $35/ton. It appears that the price of other types of scrap processed to 12″ size would also be in this order. Material of 24″ maximum size for foundry use is presently priced in Vancouver at close to $33/ton.

Aside from the increased future demand for scrap due to the Pacific Continuous Steel operation, the outlook for scrap prices in the Vancouver area to 1980 is for them to remain near present levels or to decrease. The largest single price determinant over this period will be the extent to which Western Canada Steel chooses to use steel ingots as a raw material. Should they increase substantially their use of ingots the price of scrap could be expected to drop sharply.

Adding the Pacific Continuous Steel demand for scrap however to this other demand over the 1970-

1980 period will in our opinion counteract the price softening tendency which we foresee under existing conditions and result in upward pressure on prices in the Vancouver area. Adding Pacific Continuous Steel's demand for scrap we feel a conservative position would be to allow a Vancouver price for 12″ prepared scrap of $35 per ton in the first year, $36 per ton in the second year, and $37 per ton thereafter to 1980.

Because of the requirement for small size scrap "shredded" material would be especially suited to the Pacific Continuous process. No shredded scrap is produced in the Greater Vancouver area at the present time though one firm, the N. and S. Steel Co. Ltd., plan to begin operation in the immediate future of a 50 to 100 ton per day facility.

Motor vehicle hulks provide a large share of the shredders' raw material. We have concluded that in the order of 20,000 to 25,000 tons of vehicles suitable for shredding are scrapped annually in Greater Vancouver and adjacent areas. Not all of this material would be available to shredders. This is not a large amount relative to Pacific Continuous Steel's demand and because of this other sources and types of small scrap must be sought out by the new mill. Also more than one source of scrap is necessary if Pacific Continuous is to bargain from a position of strength in price negotiations with scrap processors.

The rate of growth of motor vehicle registrations (and therefore of scrapped vehicles) will increase by approximately 5% per year to 1980.